WHAT IS CLAIMED IS:

1. A microporous biodegradable polymeric article comprising an essentially continuous porosity with a void volume from 10 to 90%, wherein pore diameters show a unimodal distribution set to a predefined unimodal peak location corresponding to a chosen pore diameter, and wherein a majority of pores has a diameter within ± 50% of the chosen pore diameter.

2. The microporous biodegradable polymeric article according to claim 1, wherein the predefined unimodal peak location corresponds to a chosen pore diameter selected from 20 nm to 500 µm.

3. The microporous biodegradable polymeric article according to claim 2, wherein the predefined unimodal peak location corresponds to a chosen pore diameter selected from 1 to 72 µm.

4. The microporous biodegradable polymeric article according to claim 3, wherein the majority of pores has a diameter within ± 40% of the chosen pore diameter.

5. The microporous biodegradable polymeric article according to claim 1, wherein the predefined unimodal peak location corresponds to a chosen pore diameter selected from 1 to 3 µm, and wherein the majority of pores has a diameter within ± 25% of the chosen pore diameter.

6. The microporous biodegradable polymeric article according to claim 1, wherein the porosity is fully continuous.

7. The microporous biodegradable polymeric article according to claim 1, wherein the article has a symmetric morphology.

8. The microporous biodegradable polymeric article according to claim 1, wherein the article has an asymmetric morphology.

9. The microporous biodegradable polymeric article according to claim 8, wherein the article has a closed-cell skin.

10. The microporous biodegradable polymeric article according to claim 1, wherein at least 95% of said article is made of a biodegradable medical polymer selected from the group consisting of poly(lactic acid), poly(glycolic acid), poly(lactic-co-glycolic), polyorthoesters, polycaprolactones, polyanhydrides and their copolymers.

11. The microporous biodegradable polymeric article according to claim 1, wherein at least 99% of said article is made of a biodegradable medical polymer selected from the group consisting of poly(lactic acid), poly(glycolic acid), poly(lactic-co-glycolic), polyorthoesters, polycaprolactones, polyanhydrides and their copolymers.

12. The microporous biodegradable polymeric article according to claim 1, wherein said article is essentially made of a biocompatible, implantable polymer.

13. A microporous biodegradable polymeric article comprising an essentially continuous porosity with a void volume from 10 to 90%, wherein pore diameters show a unimodal distribution set at a predefined unimodal peak location corresponding to a chosen pore diameter, and wherein a majority of pores has a diameter within ± 50% of the chosen pore diameter, prepared according to a method comprising the steps:

a) selecting at least one biodegradable polymer A, one polymer B, biodegradable or not, at least partially immiscible with A, and a polymeric compatibilizer C for A and B;

b) melt blending the selected polymers from step a) and the compatibilizer C, thereby preparing a compatibilized polymer

blend, wherein said polymers A and B have an essentially continuous morphology;

c) cooling said polymer blend to room temperature, thereby retaining its morphology; and

d) extracting said polymer B and said compatibilizer C, at least partially, from the polymer blend by dissolving them in a solvent that is a non-solvent of polymer A.

14. A method of preparation of a microporous biodegradable polymeric article, comprising the steps:

a) selecting at least one biodegradable polymer A, one polymer B, biodegradable or not, at least partially immiscible with A, and a polymeric compatibilizer C for A and B;

b) melt blending the selected polymers from step a) and the compatibilizer C, thereby preparing a compatibilized polymer blend, wherein said polymers A and B have an essentially continuous morphology;

c) cooling said polymer blend to room temperature, thereby retaining its morphology; and

d) extracting said polymer B and said compatibilizer C, at least partially, from the polymer blend by dissolving them in a solvent that is a non-solvent of polymer A,

wherein said polymeric article has an essentially continuous porosity with a void volume from 10 to 90%, wherein pore diameters show a unimodal distribution set to a predefined unimodal peak location corresponding to a chosen pore diameter, and wherein a majority of pore has a diameter within ± 50% of the chosen pore diameter.

15. The method according to claim 14, wherein said polymer A is a biodegradable medical polymer.

16. The method according to claim 15, wherein said polymer A is an aliphatic polyester.

17. The method according to claim 15, wherein said polymer A is selected from the group consisting of poly(lactic acid), poly(glycolic acid), poly(lactic-co-glycolic), poly(hydroxyalkanoates), polyorthoesters, polycaprolactones, polydioxanone, polyanhydrides and their copolymers.

18. The method according to claim 14, wherein said polymer B is a non-biodegradable polymer.

19. The method according to claim 14, wherein said polymer B is a biodegradable medical polymer.

20. The method according to claim 19, wherein said polymer B is selected from a group consisting of poly(lactic acid), poly(glycolic acid), poly(lactic-co-glycolic), poly(hydroxyalkanoates), polyorthoesters, polycaprolactones, polyanhydrides and their copolymers.

21. The method according to claim 14, wherein said compatibilizer C is a polymeric compatibilizer.

22. The method according to claim 21, wherein said compatibilizer C is a copolymer of A and B.

23. The method according to claim 14, wherein said polymers A and B are fully immiscible.

24. The method according to claim 14, wherein said polymer blend is co-continuous at more than 90%.

25. The method according to claim 14, wherein said polymer blend may contain one or more additives.

26. The method according to claim 14, wherein said polymer blend is submitted to a further step of controlled annealing between steps b) and c), thereby increasing the pore size of the porous article.

27. The method according to claim 14, wherein said polymer blend is submitted to controlled cooling rates in step c).

28. The method according to claim 14, wherein said polymer blend is further shaped into a geometrical form between steps b) and c).

29. The method according to claim 28, wherein said polymer blend is further shaped in a mold or die, between steps b) and c).

30. The method according to claim 28, wherein said polymer blend is shaped by injection molding, between steps b) and c).

31. The method according to claim 28, wherein said polymer blend is formed by extrusion, between steps b) and c).

32. The method according to claim 28, wherein said polymer blend is formed by melt spinning between steps b) and c).

33. The method according to claim 14, wherein said polymer blend is submitted to a mechanical stress that orients the porosity in at least one specific direction, between steps b) and c).

34. The method according to claim 14, wherein said polymer blend is submitted to a mechanical stress that orients the porosity in at least one specific direction, during step c).

35. The method according to claim 14, wherein said polymeric article is further submitted to a controlled immersion in a solvent for its polymer A after step d), thereby creating a closed-cell skin.

36. The method according to claim 14, wherein said polymer blend is further submitted to a controlled immersion in a common solvent for A and B between steps c) and d), thereby creating an asymmetric open-cell morphology in the porous article.

37. The use of a microporous biodegradable article according to any of claims 1-13 in tissue engineering.

38. The use of a microporous biodegradable article obtained by the method according to any of claims 14-36 in tissue engineering.

39. The use of a microporous biodegradable article according to any of claims 1-13 as a substrate for controlled release applications.

40. The use of a microporous biodegradable article obtained by the method according to any of claims 14-36 as a substrate for controlled release applications.

41. The use of a microporous biodegradable article according to any of claims 1-13 as an implantable medical device.

42. The use of a microporous biodegradable article obtained by the method according to any of claims 14-36 as an implantable medical device.